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V.34 Modem

## DATA PUMP REFERENCE DESIGN

OVERVIEW

The V.34 modem uses a 33-MIP DSP to execute with no external memory required. Implementation requires only a single Analog Devices DSP to execute. Clock recovery and resampling is entirely done in software. This feature enables easy interfacing with a wide variety of codecs such as the AD1843. For the digital modem implementations, no codec is needed, since the sampling rate conversions can be done in software.

HARDWARE ARCHITECTURE
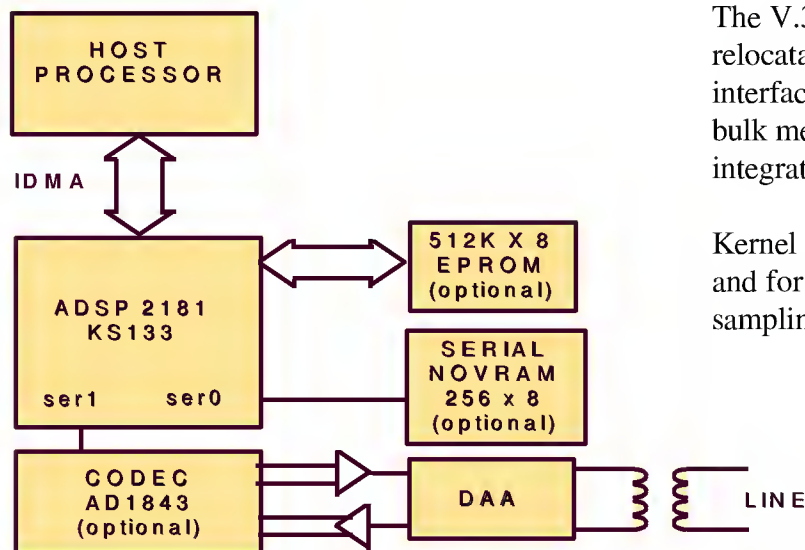
All software executes from internal memory. It can be loaded from an external storage device such as an EPROM or via the host interface. Under these circumstances, the architecture can support DSP memory upload of 80K within 70 msec.

SOFTWARE ARCHITECTURE
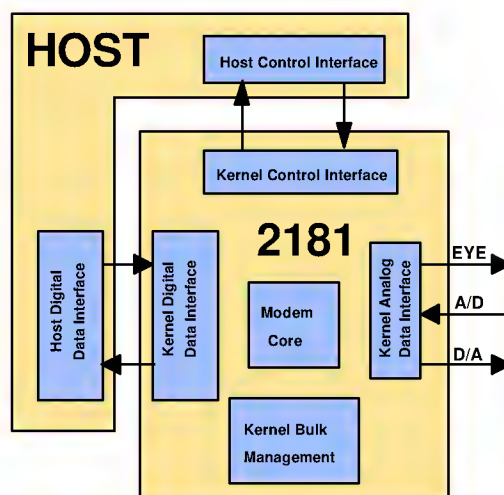
The V.34 Modem Data Pump package consists of a relocatable modem core in object format. All interfaces to external systems such as host, codec and bulk memory is available in source format for easy integration with user applications.

Kernel drivers are available for the AD1843 codec and for direct ISDN connection at an 8 KHz PCM sampling rate

BOOT MECHANISM

The V.34 software is split up into several pages. Only one page is contained in the internal memory of the DSP at any given moment.

TABLE 1

Page	PM	DM
BOOT	716	683
DIAL	1832	1240
V22bis	6029	2249
V32bis	9408	12297
FAX	6953	9501
FSK	2881	1972
V8	2709	2521
INFO	9265	7432
V34	13734	13375

Table 1 indicates the amount of memory used in words (3 bytes for PM, 2 bytes for DM). From this table, the amount of memory left for user applications on each page can be deducted. The total amount of available memory is 16KWords for PM space and DM space.

Two boot cores are supported :
- from EPROM
- using IDMA for host download

PERFORMANCE

TABLE 2

Required SNR (dB)

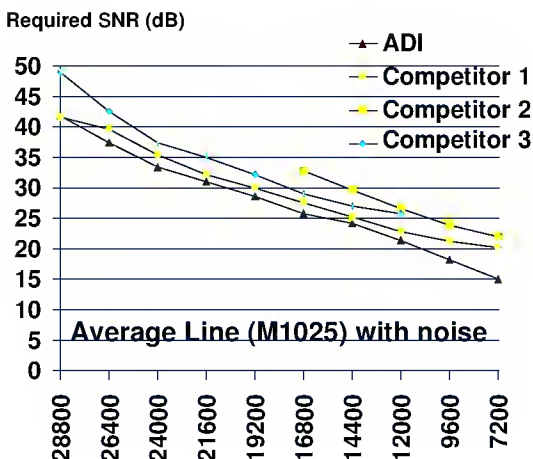Average Line (M1025) with noise

Table 2 shows a performance comparison between the ADI modem and three major competitors. From the graph, one can see that Competitor 3 will only connect at 28.8 Kbit/s, with 8 dB less noise and Competitor 2 cannot connect on this line at speeds higher than 16.800 Kbit/s.

ADDING APPLICATIONS

A major advantage of this solution is that other applications can be integrated with the modem software, even running concurrently on the same DSP. How large the application can be, depends on which ITU recommendation is running concurrently. In V.34 operation, a minimum of 4 MIPS is available on the DSP for other purposes. By reducing features, this number may be increased up to 11 MIPS.

APPLICATIONS INCLUDE
- Video Conferencing
- Cable Modems
- PC Modems
- Laptop Fax Modems

ADI TECHNOLOGY PARTNER

Telindus, a designer and manufacturer of high quality modems is based in Belgium and is licensing code to Analog Devices for sales with their chipset solutions.

ORDERING INFORMATION

ADSST-MOD-2000
  Includes DSP and
  V.34 Modem License

ADSST-MOD-2010
  Includes DSP and
  V.34 **Modem License**

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